

of a ground for such reproaches. The more immediate object of his work, however, is to establish an algebra of ratios, on the same footing as that of abstract numbers, and thus to dispense with the unmathematical expedient of regarding all magnitudes as commensurable with each other, and to furnish definite notions of the powers and roots of ratios in their most difficult and comprehensive forms. These purposes, in our humble opinion, he has accomplished in that efficient manner which might have been anticipated from his growing talent. "The application of algebra to geometry," as he observes, and "which is the great object of all who study mathematics with a view to the purposes of life, will thus be rendered more satisfactory, if not more conclusive, in its results; and the doctrine of proportion, as taught in the fifth book of Euclid, will be relieved of the circumlocution and tedious repetition in which his theory abounds."

Taking for granted that a certain degree of mathematical experience is requisite fully to comprehend the subject, he has assumed the results of arithmetical algebra, and notwithstanding the prejudices of some, has adopted the definitions and language of limits, being persuaded that a studied avoidance of the use of limits in the treatment of continuous magnitude is of no advantage to the student, and introduces difficulties equal at least to those it professes to remove. A few propositions, treating principally of the limits of concrete quantities, though apparently foreign to the work, have been introduced by way of furnishing concise and easily-remembered proofs of relations afterwards deduced; and having fully considered the ratios of concrete quantities, in the conclusion of the work, a definition of the notion of a ratio of ratios is appended.

We would willingly give a citation of the author's mode of dealing with his subject, but its subdivisions are so consecutively and logically linked, that it would be no easy matter to occupy a small space without being betrayed into yielding up a larger than our own geometrical limits will fairly allow.

#### AN ACCOUNT OF AN EXTRAORDINARY INSTANCE OF THE RAPID DECAY OF TIMBER, FROM DRY ROT, WHICH OCCURRED IN THE CHURCH OF THE HOLY TRINITY, AT CORK.\*

So many naturalists and men of science having endeavoured to account for the origin of dry rot, I shall not advance any theory of my own on the subject, although I believe that much still remains to be inquired into respecting its causes and consequences; but with the view of attracting to it that attention which its importance demands, I beg leave to submit to the institution an account of an extraordinary case that occurred in Cork; at the same time urging on my professional brethren to record any other instances which may come within their knowledge, in order that those who may be disposed further to investigate the subject, may have the benefit of facts, given on the authority of practical men.

The parish church of the Holy Trinity in Cork, in the year 1827, having been found to be in a bad state of repair, and quite deformed from bad and unequal foundations, the parishioners resolved on building a new church; but through want of funds, not being able to carry their design into execution, an extensive repair was decided on. The tower was taken down, and one side wall and the end of the church was rebuilt.

This church is 100 feet long by 50 feet wide, divided into a nave and aisles by double tiers of columns, the lower tier being of solid timber, supporting galleries, and resting upon rude rubble stone piers in the vaults below, the upper tier being of built timber columns supporting the roof. It is necessary to describe the building, in order to show that from retaining a part of the old timber-work the evil of dry rot emanated.

For years there had not been anything intervening between a great part of the body of the old church and the burial vaults beneath, except a timber floor, and though the interior

was spacious, and even handsome, this abomination long continued.

Immediately under the floor of the church, and open to the vaults, longitudinal beams of Irish oak of from 12 to 14 inches square had been placed, resting on piers, and forming supports for the joists. Though these oak beams were decayed for an inch deep at their surfaces, sufficient of the timber (as it was thought) remained sound, and it was decided that neither they, nor the piers upon which they rested, should be removed. The vaults are arched over; memel joists, 6 inches by 4 inches, were placed on the vaulting, and connected with the oak beams which rested on the piers: the floors were removed; the old pews were replaced; new columns, coated with acquila, were erected over the galleries, the old ones in the lower tier retained; and the whole repairs having been thus completed, the church was re-opened for divine service in April, 1829.

In November, 1830 (but eighteen months afterwards), the congregation was annoyed by an unpleasant smell, which, on examination, was found to proceed from dry rot of the most alarming nature.

On opening the floors under the pews a most extraordinary appearance presented itself. There were flat fungi of immense size and thickness, some so large as almost to occupy a space equal to the size of a pew, and from 1 to 3 inches thick. In other places fungi appeared, growing with the ordinary dry rot, some of an unusual shape, in form like a convolvulus, with stems of from a quarter to half an inch in diameter. When first exposed, the whole was of a beautiful buff colour, and emitted the usual smell of the dry rot fungus.

Whatever may have been the surprise at the rapid growth of the plant, its action on the best Memel timber was a source of greater astonishment. I took up, with nearly as much ease as I would a walking cane, that which eighteen months before, was a sound piece of timber (one of the joists) from 12 to 14 feet long, 6 inches by 4 inches scantling; the form of the timber remained as it came from the saw, but its strength and weight were gone. The timber of the joists and floor over the new brick vaulting was completely affected by the dry rot, which was rapidly spreading to the lower part of the columns under the galleries, so that at the rate the infection proceeded, the total destruction of the building would soon have been effected.

During a great part of the time occupied in the repairs of the church the weather was very rainy. The arches of the vaults having been turned before the roof was slated, the rain water saturated the partly decayed oak beams, before described. The flooring and joists, composed of fresh timber, were laid on the vaulting before it was dry, coming in contact at the same time with the old oak timber, which was abundantly supplied with the seeds of decay, stimulated by moisture, the bad atmosphere of an ill-contrived burial place, and afterwards by heat from the stoves constantly in use. All these circumstances account satisfactorily to my mind for the extraordinary and rapid growth of the fungi.

The large sum of 4,000*l.* having been so lately expended on the church, caused great anxiety to the parishioners. The opinions of the most experienced professional men were taken, and all agreed that the first effort should be to cut off the communication with the galleries, the disease having already extended 3 feet upwards on the lower columns.

The new brick vaulting was found penetrated by the fungi, imposing the necessity of having the vaulting, as well as all the timber work in the lower part of the church, entirely and carefully removed. Newer and thicker vaulting was then substituted for that which was taken down, and the whole of the floor over it was laid with Yorkshire and Shannon flags set in Roman cement. New pews were erected, resting on iron chairs let into the flagging; the flooring of all the pews was constructed so as to be occasionally removed for inspection; Roman cement was internally used next to and at the bottom of the walls, and iron columns were substituted for those of timber in the lower tier. Here I must notice the clever plan of my friend, Richard Beamish, Esq., C.E., who caused a screw to be placed in the head of each iron column, which was screwed up, so as to take the load before the

temporary supports were removed, thereby avoiding the fracture consequent on ordinary wedging, so that all was effected without any disturbance or sinking of the galleries, and the columns which supported the roof, &c., the screws in each column being accurately adjusted, so as to meet the pressure from above.

The expense incurred by these repairs was very considerable; but it is satisfactory to state that there has not been a re-appearance of the dry rot since that time, now a period of sixteen years.

Of late the subject has been diligently investigated by men of science, including the chemist and the naturalist. It is not my intention to dwell on the merits of the various preventative processes that have been suggested, or for which patents have been taken out, as my object is only to give a simple account of a very peculiar case of the disease, the facts of which strengthen me in my opinion, that the best economy in extensive repairs is to be cautious in the use of old timber, and if it must be used, not to permit new timber to come in contact with it.

I shall conclude by observing that the seasoning of timber is seldom sufficiently attended to, and that the characters of professional men are frequently injured by not being more stringent in demanding proof of the stacking and seasoning of timber for a sufficient time.

#### Miscellanea.

OXFORD ARCHITECTURAL SOCIETY.—At the tenth annual meeting of the society, which took place in the society's rooms, Holywell, on Wednesday, the 20th of June, the Rev. W. Sewell, president, in the chair, a hope was expressed that the society might be of use in giving plans for almshouses, schools, &c., which would assist a parish clergyman when unable to employ an architect. The chairman stated that the committee had it in contemplation to establish some elementary lectures in architecture. The Rev. Mr. George Williams, President of the Cambridge Architectural Society, then read a paper on the church of St. Sophia, at Constantinople. The secretaries intimated that they would be glad if any architect or parish clergy would furnish them from time to time with plans of schools, &c., with the actual cost of erection. We are the last persons in the world to attempt to prevent generous actions. All we have to say is, that if the Church Commissioners and other bodies obtain gratuitous plans of churches, to forward to those parishes who wish to build such.—the Poor-law Commissioners, plans of workhouses.—the Inspectors of Prisons, plans of jails, &c., there will be little employment for poor architects.

ST. ANDREW'S, TRENT, SOMERSET.—The present rector of this church, the Rev. W. H. Turner, a few years since lengthened the nave one bay to the westward, at the same time adding a little chapel on the north side of the nave to contain the organ, and a new roof to nave and chancel, unfortunately, groined with plaster ribs and spandrels; the whole of the seats are rendered uniform and copied from existing specimens; the lower part of the tower, which forms the south transept, is filled with plainer ones; a pulpit was given by the rector, and the chancel seats placed stallwise. The effect of the chancel, perpendicular in style, is entirely destroyed by the plaster roof, &c. Series of arches run in plaster beneath the windows immediately surrounding the sanctuary, the easternmost filled with the Decalogue written on porcelain. The screen still remains. All the windows, save in the tower, are filled with stained glass, those in the nave by Waller. The tower with spire is of the geometrical decorated style, and is built at the south-east end of the nave, forming a transept on the west side, and abutting against the tower, is a porch of the same date. During the last year, the pinnacles on the parapet of the tower have been renewed, together with the tracery of the windows, the sanctuary paved with Minton's tiles, and a brass, by Waller, placed in the chancel to the memory of a former rector of the parish. The latter works have been carried out under the superintendence of Mr. Withers.

\* By Sir Thomas Deane. From the "Transactions of the Institution of Civil Engineers of Ireland." Vol. II. Dublin, S. B. Colclough & London, Whittaker.